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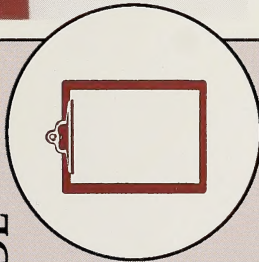


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DATA  
MANAGEMENT  
MODULE 7

STUDENT SUPPORT GUIDE



# MATHEMATICS 7

Distance  
Learning



Alberta  
EDUCATION



## Mathematics 7

### Module 7: Data Management

### STUDENT SUPPORT GUIDE

## Note to the Parent or Guardian

This Mathematics Student Support Guide contains answers to activities in the accompanying Module Booklet. It should be kept secure by the parent or guardian if the student is under 16 years of age. Younger students should not have access to this Guide except under supervision.

This Student Support Guide does not contain the answers to the accompanying Assignment Booklet. The Assignment Booklet will be graded by the student's distance education teacher.

Mathematics 7  
Student Support Guide  
Module 7  
Data Management  
Alberta Distance Learning Centre  
ISBN No. 0-7741-0185-7

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## MODULE INTRODUCTION

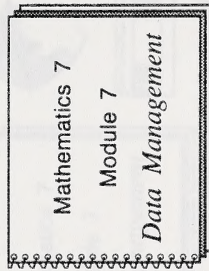
### What Lies Ahead

In the Module Introduction the student will preview the module components and discover how the module will be evaluated.

The student will also learn why data management is important.

### Gathering Materials

For the Module Introduction the student will need the following item.



Put away the Assignment Booklet for Module 7 in a secure place until it is needed.

Tell the student where the video and computer disks are stored.

### Guiding the Student

- Have the student read the Welcome and encourage the student to listen to the companion audiocassette.
- Have the student preview the Module Booklet and read the Module Introduction.
- The teacher on the tape will help guide the student. If you and the student choose not to use the audiocassette, you will have to guide the student yourself.
- Next discuss the learning process time management and evaluation with the student. (See the suggestions on the next page of this booklet.)

## The Learning Process

Each section of Module 7 deals with a different skill involving data management.

Sections have several activities.

- Introductory Activities
- Practice Activities
- Extra Practice
- Concluding Activities

Remind the student that he/she will not be expected to do all the activities. You will help him/her decide what to do.

## Time Management

Decide how long the student will need to complete the module. (The average student should spend about 4 weeks or 10 hours to complete the module. It is recommended that students spend no more than 1 hour at a time doing mathematics.)

## Evaluation

Explain that the grade on Module 7 is based on work in the assignment booklet. The module booklet will help prepare the student for the assignment booklet.

## GETTING SET

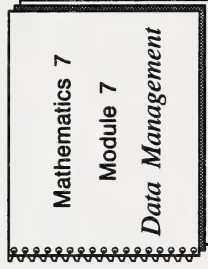
### What Lies Ahead

In this section the student will test these skills.

- calculating averages
- keeping tallies and to make frequency tables
- constructing and interpreting pictographs, bar graphs, line graphs and circle graphs
- choosing the most appropriate graph

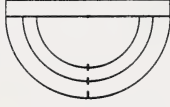
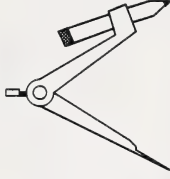
### Gathering Materials

The student will need these items for this section.



(optional)

**THINKABOUT:**  
Find Your Guide  
(AIT)



### Guiding the Student

- Have the student turn to Section 1 in the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Have the student complete the pretest.
- Afterwards help the student check the answers. It may not be necessary for the student to correct any errors. See the page at the end of this section for further directions.

## Pretest

1. Caroline and Shauna looked over job-offers for students for summer employment. Use the chart at the right to answer the following questions.



WESTFILE INC.

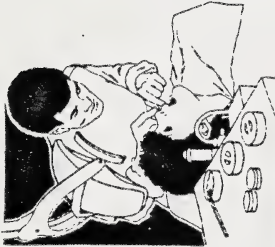
- What is the lowest and highest rate of pay?
- What is the average rate of pay for the above jobs?

## Suggested Answers

Job	Pay Per Hour
Pool Attendant	\$4.95
Gas Pump Attendant	\$3.75
Waiter/Waitress	\$4.00
Child Care Worker	\$4.75
Rock Picker	\$5.00
General Farm Worker	\$4.80
Grass Cutter (for city parks)	\$5.00
Office Worker (typing, filing)	\$5.25
Cashier	\$4.75
Babysitter	\$2.00

- 2.00/h lowest  
5.25/h highest
  - $$\frac{44.20}{10} = \$4.42$$

2. The students in grade 7C were asked how many teeth fillings they had during their lifetimes.



They responded as follows.

3, 4, 5, 8, 2, 0, 6, 7, 4, 4, 8, 6,  
1, 1, 4, 6, 3, 5, 7, 4, 1, 2, 3, 0,  
0, 2, 5, 6, 2, 1, 0, 4, 3

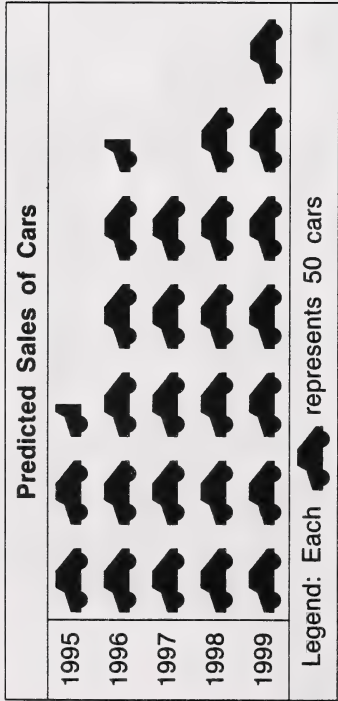
Complete the tally chart and find the frequency for each number of fillings.


Number of Fillings	Tally	Frequency
0		4
1		
2		
3		
4		
5		
6		
7		
8		

2.

Number of Fillings	Tally	Frequency
0		4
1		4
2		4
3		4
4	I	6
5		2
6		4
7		2
8		2

3. Super Charge Vehicles Ltd. are predicting their sales of electric cars. The first automobile will be a 4-seater Hummalong. With its large battery it is expected to go 250 km before the battery would need to be recharged. Recharging should only take 1½ hours. The predicted sales are displayed in this graph. Study this graph. Then answer the following questions.



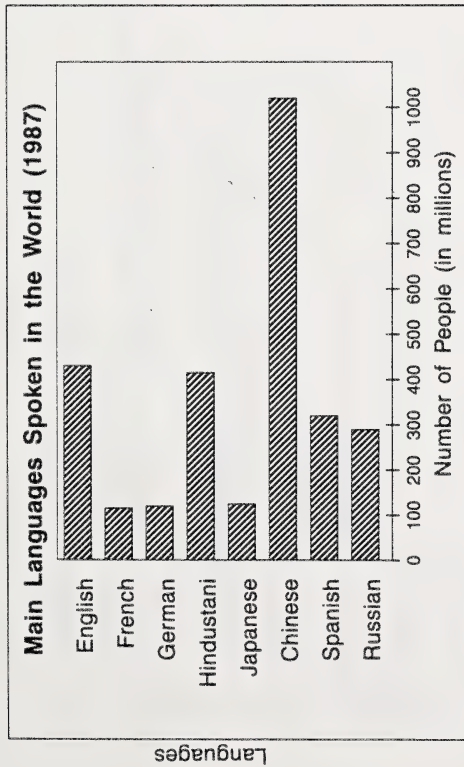
- a. How many cars would be presented by ?

3. a. 25 cars
- b. In which year should the production be over 300 vehicles?

b. 1996
- c. If the car sells for \$16 000, how much would the company expect to earn in 1995?

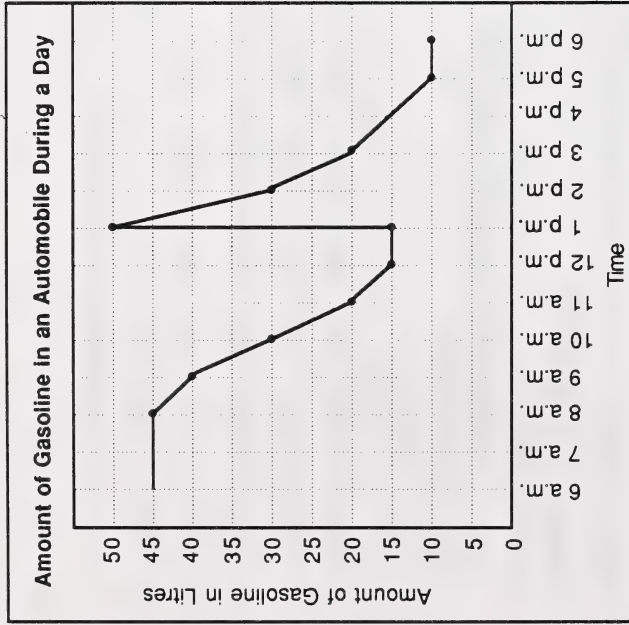
c. \$4 800 000

4. Study this graph. Then answer the following questions.



- a. Which language is spoken by the greatest number of people?
- b. About how many people speak English?
- c. About how many people speak French?
4. a. Chinese
- b. 430 000 000
- c. 120 000 000

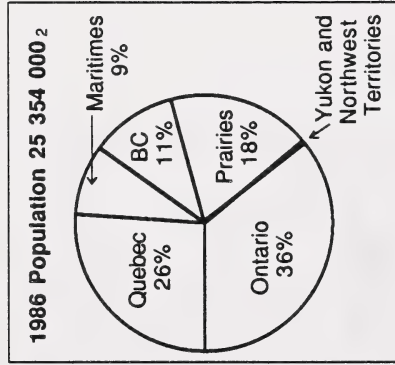
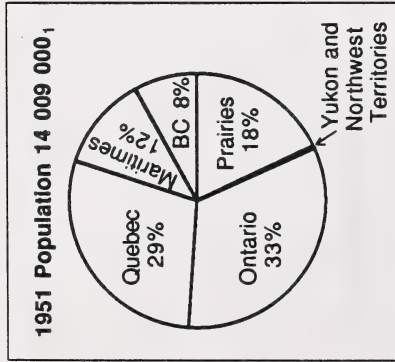
5. Study the graph below. Then answer the following questions.



- a. When did the driver of the car leave home?
- b. When did the driver eat lunch?
- c. When did the driver arrive home?
- d. What do you think the driver does for a living? Why?
- e. When did the driver fill up the gas tank?
- f. How much gas did the driver purchase?
- g. What is the capacity of the tank?
- h. How much gas is left in the tank at 6 p.m.?

5.
  - a. 8:00
  - b. 12:00 p.m. – 1:00 p.m.
  - c. 5:00 p.m.
  - d. Taxi driver or salesperson. The driver is driving most of the day.
  - e. 1:00 p.m.
  - f. 35 L
  - g. 50 L
  - h. 10 L

6. Study these graphs. Then answer the following questions.



### Note

The Yukon and Northwest Territories are included as lines on these graphs because their population is less than 1% of the total population of Canada.

<sup>1,2</sup>Statistics Canada.

- a. In what regions of the country did the percentage of population increase from 1951 to 1986?
- b. What was the total population of Canada?
- (i) in 1951
- (ii) in 1986
- c. Calculate the population of the Prairies.
- (i) in 1951
- (ii) in 1986
6. a. The population increased in British Columbia and in Ontario from 1951 to 1986.
- b. (i) In 1951 the population of Canada was 14 009 000.
- (ii) In 1986 the population of Canada was 25 354 000.
- c. (i) In 1951 the population of the Prairies was
- $$\begin{aligned} & 18\% \text{ of } 14\,009\,000 \\ &= 0.18 \times 14\,009\,000 \\ &= 2\,521\,620 \end{aligned}$$
- (ii) In 1986 the population of the Prairies was
- $$\begin{aligned} & 18\% \text{ of } 25\,354\,000 \\ &= 0.18 \times 25\,354\,000 \\ &= 4\,563\,720 \end{aligned}$$

7. Make a pictograph to represent this data.<sup>1</sup>

Automobiles Registered in Canada in 1986	
Newfoundland	176 000
Nova Scotia	337 000
Prince Edward Island	56 000
New Brunswick	286 000
Quebec	2 614 000
Ontario	4 244 000
Manitoba	527 000
Saskatchewan	389 000
Alberta	1 296 000
British Columbia	1 527 000
Territories	25 000

7.

The Number of Automobiles Registered in Canada for 1986

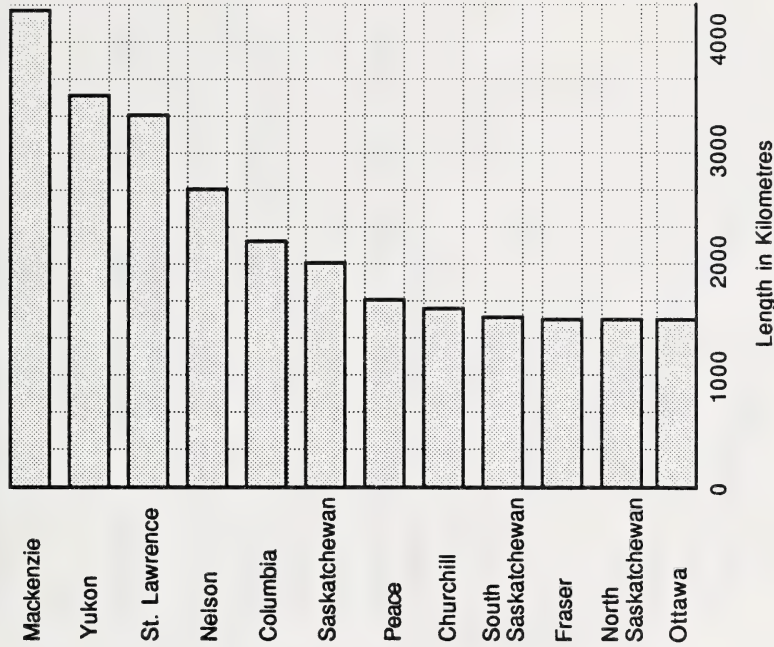
Newfoundland	o c
Nova Scotia	c
Prince Edward Island	ooo c
New Brunswick	o o c
Quebec	oooo ooooo ooooo ooooo oooo o c
Ontario	oooo ooooo ooooo ooooo oooo ooooo ooooo ooooo o o c
Manitoba	oooo c
Saskatchewan	o o o c
Alberta	oooo ooooo o o c
British Columbia	oooo ooooo ooooo c
Territories	c
Legend: 1 circle = 100 000 cars	

8. Make a bar graph to represent this data.<sup>1</sup>

**The Longest Rivers in Canada**

River	Length
Mackenzie	4 241 km
Yukon	3 185 km
St. Lawrence	3 058 km
Nelson	2 575 km
Columbia	2 000 km
Saskatchewan	1 939 km
Peace	1 923 km
Churchill	1 609 km
South Saskatchewan	1 392 km
Fraser	1 370 km
North Saskatchewan	1 287 km
Ottawa	1 271 km

**The Longest Rivers in Canada**



<sup>1</sup>Statistics Canada.

9. Teresa's parents kept a baby book and recorded her height at birth and on every birthday.

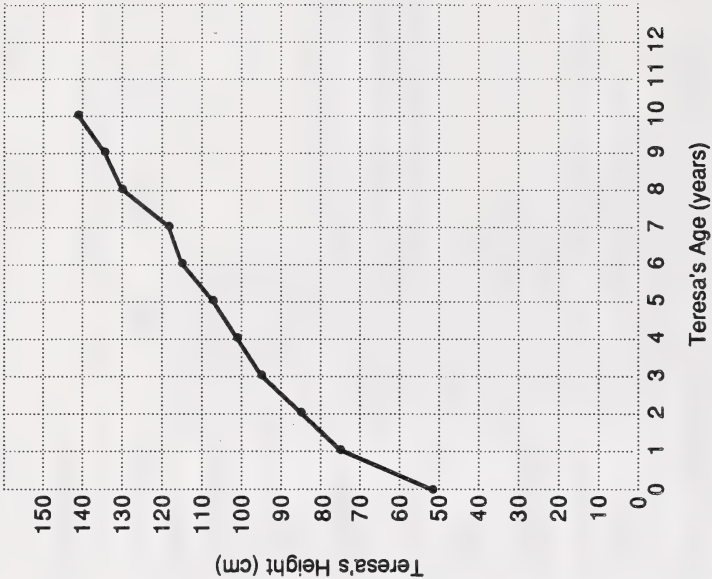
Theresa's Growth											
Age (a)	birth	1	2	3	4	5	6	7	8	9	10
Height (cm)	51	76	86	94	101	104	115	119	130	135	141

Make a line graph to display this data.

**Note**

The metric symbol for years is a.

**Teresa's Growth Over Her First 10 Years**



10. Make a circle graph to display this data.

Money Raised by Student Council	
Student Cards	12 000
Canteen	6 000
Dances	2 000
Athletics	10 000
Fund raiser	10 000
Total	40 000

10. Calculations.

Total

$$12\,000 + 6\,000 + 3\,000 + 10\,000 + 9\,000 = 40\,000$$

Student Cards

$$12\,000 \div 40\,000 = 0.3 = 30\%$$

$$30\% \text{ of } 360^\circ$$

$$= 0.3 \times 360$$

$$= 108^\circ$$

Canteen

$$6\,000 \div 40\,000 = 0.15 = 15\%$$

$$15\% \text{ of } 360^\circ$$

$$= 0.15 \times 360$$

$$= 54^\circ$$

Dances

$$2\,000 \div 40\,000 = 0.05 = 5\%$$

$$5\% \text{ of } 360^\circ$$

$$= 0.05 \times 360$$

$$= 18^\circ$$

Fund Raisers/

$$10\,000 \div 40\,000 = 0.25 = 25\%$$

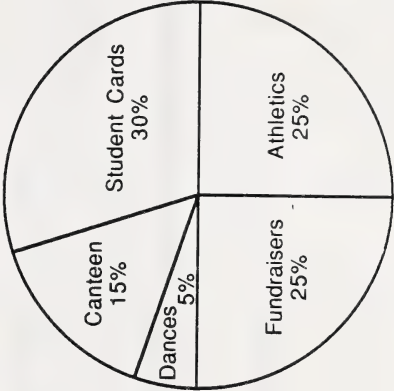
Athletics

$$25\% \text{ of } 360^\circ$$

$$= 0.25 \times 360$$

$$= 90^\circ$$

Student Council Income



11. What graph would you use to display the following.

- |  |                            |
|--|----------------------------|
| a. the change in the price of an average single-family house during the years 1980 to 1990 | 11. a. line graph          |
| b. the different ways an average family spends its yearly income in 1990                   | b. circle graph            |
| c. the amount of garbage disposed of in major cities in Canada in 1990                     | c. pictograph or bar graph |
| d. the number of students in school districts in Alberta in 1990                           | d. pictograph or bar graph |

### Guiding the Student

After checking the answers, compare the student's results with the following chart. (The chart lists the skills covered

in the Pretest and the section in which the skill will be taught.)

Question	Skill	Section
1	Calculating averages	2
2	Keeping tallies and frequency charts	3
3	Interpreting pictographs	4
4	Interpreting bar graphs	5
5	Interpreting line graphs	6
6	Interpreting circle graphs	7
7	Constructing pictographs	4
8	Constructing bar graphs	5
9	Constructing line graphs	6
10	Constructing circle graphs	7
11	Choosing the most appropriate graph	8

Help the student to decide what to do next. It is recommended that the student does most of the sections which correspond to the questions with which the student

experienced difficulties and only the concluding activities in sections which correspond to the questions with which the student experienced success.



## AVERAGES

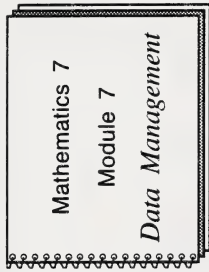
### What Lies Ahead

In this section the student will learn about

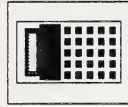
- the meaning of average
- the importance of averages
- how to calculate averages

### Gathering Materials

The student will need these items for this section.



(optional)



### Guiding the Student

- Have the student turn to Section 2 in the Module Booklet and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Then have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

## Practice Activities

## Suggested Answers

1. Here are Lisa's marks for all her projects and tests. (They are all out of 100.)

		Marks									
1st term	62	51	64	73	47	43	84	50	60	40	
2nd term	45	70	83	90	64	80	65	52	50	80	

- a. Calculate her average for 1st term.

$$\begin{aligned}
 1. \quad a. \quad & (62 + 51 + 64 + 73 + 47 + 43 + 80 + 50 + 60 + 40) \div 10 \\
 & = 570 \div 10 \\
 & = 57
 \end{aligned}$$

- b. Calculate her average for 2nd term.

$$\begin{aligned}
 b. \quad & (45 + 70 + 83 + 90 + 64 + 80 + 65 + 53 + 50 + 80) \div 10 \\
 & = 680 \div 10 \\
 & = 68
 \end{aligned}$$

- c. Did her average go up or down from the first to the second term?

- c. Her average went up.

- d. If her final mark was based on all 20 marks, what would her final mark be?

$$\begin{aligned}
 d. \quad & (57 + 68) \div 2 \\
 & = 125 \div 2 \\
 & = 62.5
 \end{aligned}$$

2. Michael Vroom was buying a new Canuck Compact car. He shopped around and got the cost from several car dealerships. All the cars came with the same equipment.

Dealers	Cost
Northern Fast-track Ltd.	\$8 975
Chevi Nicki Auto Sales Ltd.	\$8 265
Western Plains Sales Ltd.	\$9 420
Ted Blonkers Auto Sales Inc.	\$7 999
Denny André Sales Inc.	\$8 366
Benny's Best Cars Ltd.	\$7 968
East Town Car Dealers Ltd.	\$7 999

- a. What is the average cost of a Canuck compact car?

$$2. \quad a. \quad (8\,975 + 8\,265 + 9\,420 + 7\,999 + 8\,366 + 7\,968 + 7\,999) \div 7$$

$$= 58\,992 \div 7$$

$$= 8\,427.43$$

- b. Should Michael have an interest in knowing the average price of a car? Why or why not?

- b. No, Michael should be interested in the lowest price.

3. Angela thought that Junior High students watched more television than Elementary students. She did some research and asked students how many hours of television they watch per week-nights.

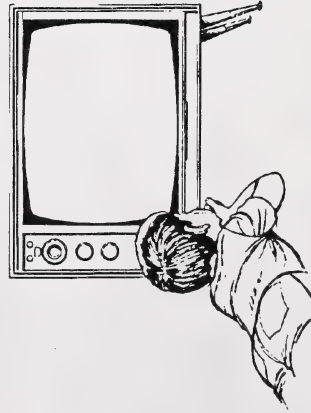
- The responses from the Elementary students were as follows:

0, 2, 4, 3, 2, 0, 0, 4, 3, 1, 1, 1, 4, 3, 0

- The responses from the Junior High students were as follows:

3, 2, 3, 4, 0, 1, 1, 4, 6, 0, 0, 4, 3, 1, 0, 1

- a. Find the average hours of television watched by both groups.



- b. Which group watches more television?

3. a. Elementary

$$(0 + 2 + 4 + 3 + 2 + 0 + 0 + 4 + 3 + 1 + 1 + 1 + 4 + 3 + 0) \div 15$$

$$= 32 \div 15$$

$$= 2.1 \text{ hours}$$

Junior High

$$(3 + 2 + 3 + 4 + 0 + 11 + 4 + 6 + 0 + 0 + 4 + 3 + 1 + 0 + 1) \div 15$$

$$= 42 \div 15$$

$$= 2.8 \text{ hours}$$

- b. Junior High group watches more television.

4. Bill Lastiwka and Mike Naidu are goaltenders for the Bear Creek Bruins. Both players have played 10 games. You have the following data.

	Goals Allowed Per Game									
	4	2	3	2	7	0	4	9	6	3
Bill Lastiwka	4	2	3	2	7	0	4	9	6	3
Mike Naidu	8	2	4	1	2	3	6	6	0	1

- a. Find the average number of goals that Bill Lastiwka and Mike Naidu lets into his net.



4. a. Bill Lastiwka

$$\begin{aligned}
 &(4 + 2 + 3 + 2 + 7 + 0 + 4 + 9 + 6 + 3) \div 10 \\
 &= 40 \div 10 \\
 &= 4
 \end{aligned}$$

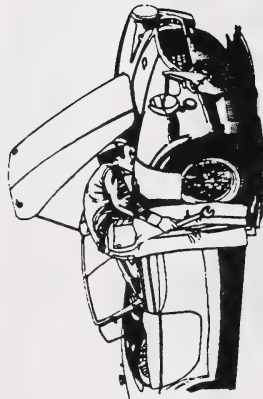
Mike Naidu

$$\begin{aligned}
 &(8 + 2 + 4 + 1 + 2 + 3 + 6 + 6 + 0 + 1) \div 10 \\
 &= 33 \div 10 \\
 &= 3.3
 \end{aligned}$$

- b. Which goalie has the better average? Explain.

- b. Mike Naidu has the better average as he lets less goals into the net.

5. The average income for auto mechanics at several garages are given in the chart at the right.



Garages	Salary
Northern Fast Track Ltd.	\$27 400
Chevi Nicki Auto Sales	\$26 800
Western Plains Sales	\$26 700
Ted Blonkers Auto Sales	\$24 900
Denny André Sales	\$31 200
Benny's Best Cars Ltd.	\$30 400
East Town Car Dealers	\$24 700
Auto City Sales	\$25 400
Astros Auto Sales	\$26 200
Southern Car Dealer	\$22 500

- a. Find the average income of an auto mechanic from the above information.

$$5. \quad a. \quad (27\,400 + 26\,800 + 26\,700 + 24\,900 + 31\,200 + 30\,400 + 24\,700 + 25\,400 + 26\,200) \div 10$$

$$= 267\,200 \div 10$$

$$= 26\,720$$

The average income is 26 720.

- b. Which garage pays more than the average?

- b. Northern Fast Track, Chevi Nicki Auto Sales, Denny André Sales and Benny's Best Cars Ltd. pay more than the average.

### Guiding the Student

- Have the student do the Concluding Activities.

- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

## Concluding Activities

1. Mrs. Mudryk is retired, but she is studying anthropology by distance education. She has one more test to write before she completes the course. In order to pass she must get an overall average of 50. Altogether she has to take 8 tests. In the first 7 tests she has the following (all marks are out of 100).

Test	1	2	3	4	5	6	7	8
Marks	55	45	40	50	50	70	60	—

- a. If she gets 50 on the final test, will she pass the course? (Show your calculations.)

- b. If she gets 75 on the final test, will she pass the course? (Work out her average mark assuming she did get 75%.)

## Suggested Answers

$$\begin{aligned}
 1. \quad a. \quad & (50 + 42 + 40 + 40 + 50 + 50 + 40 + 60 + 55) \div 8 \\
 & = 387 \div 8 \\
 & = 48.3 \text{ or } 48
 \end{aligned}$$

No. Her average will be less than 50.

$$\begin{aligned}
 b. \quad & (55 + 42 + 40 + 40 + 50 + 50 + 40 + 60 + 75) \div 8 \\
 & = 412 \div 8 \\
 & = 51.5 \text{ or } 52
 \end{aligned}$$

Yes. Her average will be greater than 50.

- c. What is the lowest mark she can get on the final test and still pass the course? (Show your calculations.)

- c. The smallest possible total

$$50 \times 8 = 400$$

Mrs. Mudryk's total

$$55 + 42 + 40 + 50 + 50 + 40 + 60 = 337$$

The difference

$$400 - 337 = 63$$

The lowest mark she can make on the final test and still pass is 63.

2. Mr. Hallowaychuck is transporting 27 hogs. He estimates the average weight of the hogs to be 90 kg.



- a. If he can get \$1.20 per kg, how much does he expect to get for his shipment of hogs?

2. a. Estimated total weight

$$27 \times 90 = 2430 \text{ kg}$$

Estimated selling price

$$2430 \times \$1.20 = \$2916.00$$

- b. The hogs actually weighed 2 501.2 kg. How much did Mr. Hallowaychuck actually receive?
- b. Actual selling price
- $$2\,501.2 \times \$1.20 = \$3\,001.44$$



## TALLIES AND FREQUENCY TABLES

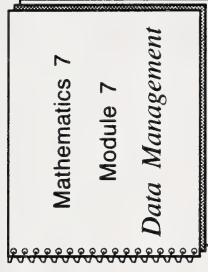
### What Lies Ahead

In this section the student will learn these skills.

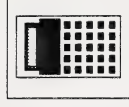
- making tallies
- making frequency tables

### Gathering Materials

The student will need these items for this section.



(optional)



### Guiding the Student

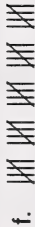
- Have the student turn to Section 3 in the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Then have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

## Introductory Activities

## Suggested Answers

1. Write the number that these tallies represent.

a. 

f. 

1. a. 3

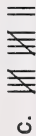
f. 25

b. 

g. 

b. 8

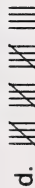
g. 2

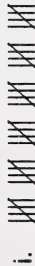
c. 

h. 

c. 12

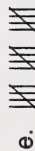
h. 3

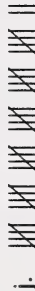
d. 

i. 

d. 19

i. 30

e. 

j. 

e. 15


j. 32

2. Write down how you would record each number as a tally.

a. 10

2. a. 

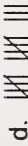
b. 22

b. 

c. 34

c. 

d. 13

d. 

e. 25

e. 

3. Betty Hindman and Arthur Clark wanted to find out which types of automobiles were the most popular in Vancouver. Both students went to busy spots and kept a tally of the cars they saw over a 15 minute period. The results are shown below.

Make of Auto	Arthur Clark's Results	Betty Hindman's Results
Honda	I	
Nissan		I
Mazda		
Ford		
General Motors		
Chrysler		
Others		

- a. Which kind of automobile was seen most by Arthur?
3. a. General Motors
- b. Which kind of automobile was seen most by Betty?
- b. Ford

- c. Which kind of automobile was seen least by Arthur?      c. Mazda
- d. Which kind of automobile was seen least by Betty?      d. Mazda

### Guiding the Student

- Have the student read the notes on Frequency Tables and do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

## Practice Activities

1. Below is the Sports, Racing Car section from the Classified section of a newspaper. Use the information in the advertisements to complete the frequency table at the right.

Sports, Racing Cars & Parts	980
-----------------------------	-----

1986 CORVETTE, racing red, loaded. 555-3311.

1976 TR6, maroon, all work done, A-one cond. \$9 000. 555-1350

1989 NISSAN 240 SX, 5 spd., racing red, only 9 500 kms. \$17 900. 555-9970.

1989 MUSTANG, 16 valve engine, 5 spd., low kms. \$17 900. 555-9970.

1973 PORSCHE 911E Targa, one owner, \$12 900. 555-8888 or 555-7484.

1987 JAGUAR Sovereign, fully loaded, immaculate cond., 1 owner. Serious enq. only. 555-3808 or 555-7128.

CONVERTIBLE '83 Mustang GLX 5.0L, 4 spd., silver, red interior. Well maint'd. \$10 900. 555-2219 evg's.

1988 Pontiac Grand Prix SE, fully loaded, upgraded stereo, pwr. seats, windows & locks. Fuel injected. Only 30 000 kms. \$17 500. 555-6482.

1981 Jaguar XJ6, black, 70 000 mi, exc. cond., \$19 800 obo. 555-4650.

1977 MGB Mark IV, gold, engine & drive train exc. \$2 800 obo. 555-3517.

1971 RED Corvette, 350, LT1, 5 spd., restored, \$22 000 obo. 555-0703.

Sports, Racing Cars & Parts	980
-----------------------------	-----

1986 BMW 325E, 2 dr., navy blue, 43 000 kms. \$19 000. 555-0311.

1980 CAMARO Z28, gold, no rust, T-roof, 350 v8, dual exhaust, headers, Kenwood stereo system, car cover & bra, \$5 300. 555-9394.

PORSCHE TARGA softback. Very rare. Leather, 5 spd., new paint & top. \$18 000, obo. 555-4725.

1974 TRIUMPH TR6. Reconditioned. Rust free. \$9 900. 555-3634.

1980 MG Midget. Excellent condition, \$4 250/obo. 555-0765.

1980 PORSCHE 924 Turbo. Air, p.w., glass sunroof, etc. Not winter driven. Exc. cond. Ph. 555-0039.

1982 PORSCHE (1982) 30 000 original kms., S. pkg., all leather, alarm, dark blue. \$33 333. 555-6743 days/after hrs. 555-9873

1984 CORVETTE, only 8 000 mi., very nice, \$25 900. 555-3980.

1984 MERCEDES 500 SEL Dark gray, immac. \$49 900. 555-0612.

## Suggested Answers

1.

Kind of Car	Tallies	Frequency
BMW		1
Corvette		3
Jaguar		2
Mercedes		1
Mustang		1
Nissan		1
Porsche		4
Other		7
Total		20

2. Below is a list of radio stations. Use the information provided to complete the frequency table at the right.

CBC (Multi-Format)  
 CFCW (Country)  
 CFOK (Country)  
 CFRN (Oldies)  
 CHED (Rock-top 40)  
 CHFA (French)  
 CHMG (Classic Gold)  
 CHQT (Easy Listening)  
 CIRK (Rock)  
 CISN (Country)  
 CJCA (News/Talk)  
 CJKE (Easy Listening)  
 CJSR (Contemporary)  
 CKER (Ethnic)  
 CKNG (All Hit)  
 CKRA (Soft Rock)  
 CKUA (Multi-Format)

2.

Category	Tallies	Frequency
Multi-format		2
Country		2
Rock		6
Easy listening		3
Other		5
Total		18

### Guiding the Student

- Have the student do the Concluding Activities.

- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

Concluding Activities

Suggested Answers

Mr. and Mrs. Vandenberg raise hens. Below is a frequency table of the number of eggs they sell over a 2 week period. Use the data in the table to answer the following questions.



First Week	Number of Eggs	Second Week	Number of Eggs
Sunday	243	Sunday	242
Monday	242	Monday	294
Tuesday	191	Tuesday	283
Wednesday	269	Wednesday	225
Thursday	270	Thursday	236
Friday	245	Friday	267
Saturday	258	Saturday	271

1. Find the average number of eggs they get daily in the first week.

$$1. \quad 1718 \div 7 = 245.4$$

She averages 245 eggs a day the first week.

2. Find the average number of eggs they get daily in the second week.

$$2. \quad 1818 \div 7 = 259.7$$

She averages 260 eggs a day the second week.

3. How many dozen eggs can they agree to supply to their customers each day? (Hint: there are 12 eggs in a dozen)

3. Answers will vary.

$$245 \div 12 = 20.4 \text{ dozen (average of 1st week)}$$

$$260 \div 12 = 21.7 \text{ dozen (average of 2nd week)}$$

She can agree to supply about 20 dozen a day.

OR

$$191 \div 12 = 15.9 \text{ dozen (lowest day)}$$

She can agree to supply about 16 dozen a day.

## PICTOGRAPHS

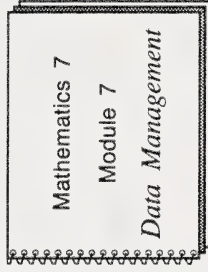
### What Lies Ahead

In this section the student will learn these skills.

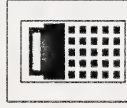
- interpreting pictographs
- constructing pictographs

### Gathering Materials

The student will need these items for this section.



(optional)



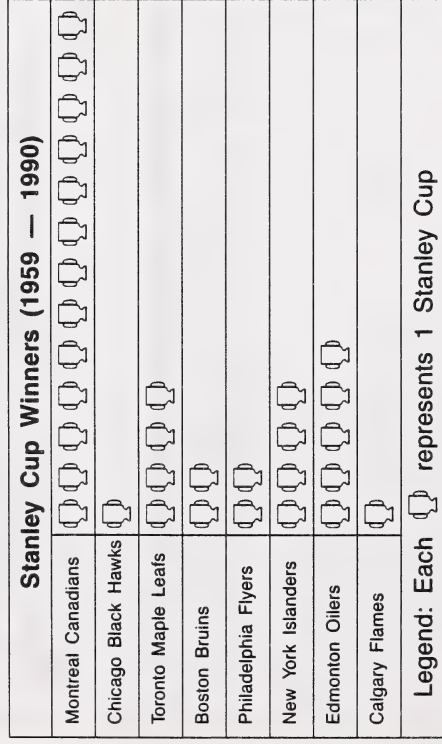
### Guiding the Student

- Have the student turn to Section 4 in the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Then have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

# Introductory Activities

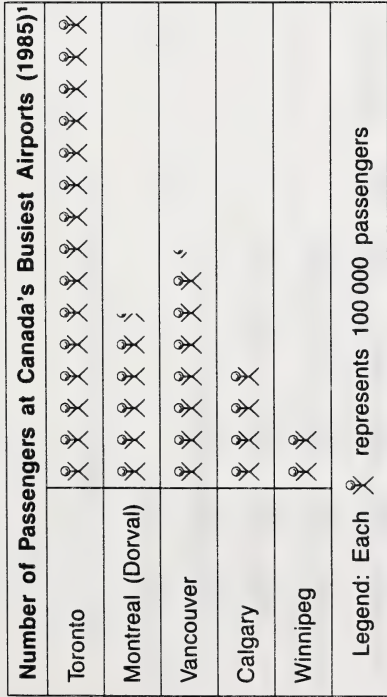
## Suggested Answers

1. Use the pictograph below to answer the following questions.



- a. Which hockey team won the most Stanley Cups from 1959-1989?  
1. a. Montreal Canadians  
b. 4  
c. 1
- b. How many Stanley Cups did the Edmonton Oilers win?
- c. How many Stanley Cups did Calgary Flames win?

2. Use this graph to answer the following questions.



a. Which is Canada's busiest city?

b. Does Vancouver airport handle more passengers than Montreal (Dorval)?

c. How many more passengers were handled in Vancouver than in Calgary?

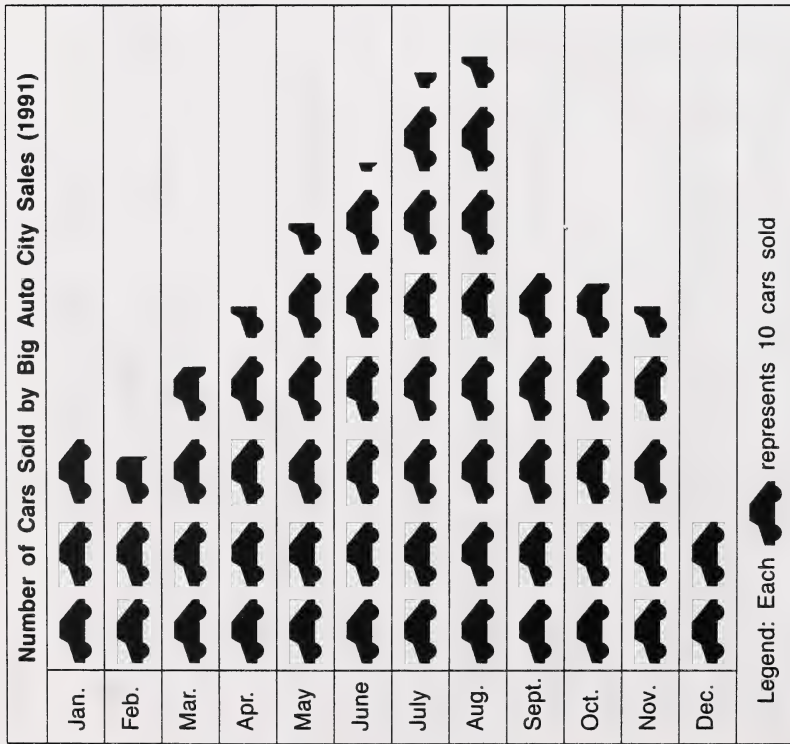
2. a. Toronto

b. Yes

c. 325 000

<sup>1</sup>Statistics Canada

3. Use the pictograph below to answer the following questions.



- a. How many cars were sold in these months?

(i) August 1990?

3. a. (i)  $7.5 \times 10 = 75$

In August 75 cars were sold.

(ii) December 1990?

(ii)  $2 \times 10 = 20$

In December 20 cars were sold.

- b. How many more cars were sold in June than in January?

b.  $3.1 \times 10 = 31$

In June 31 more cars were sold than in January.

- c. If each car was sold for \$12 000, how much was brought into the business in April?

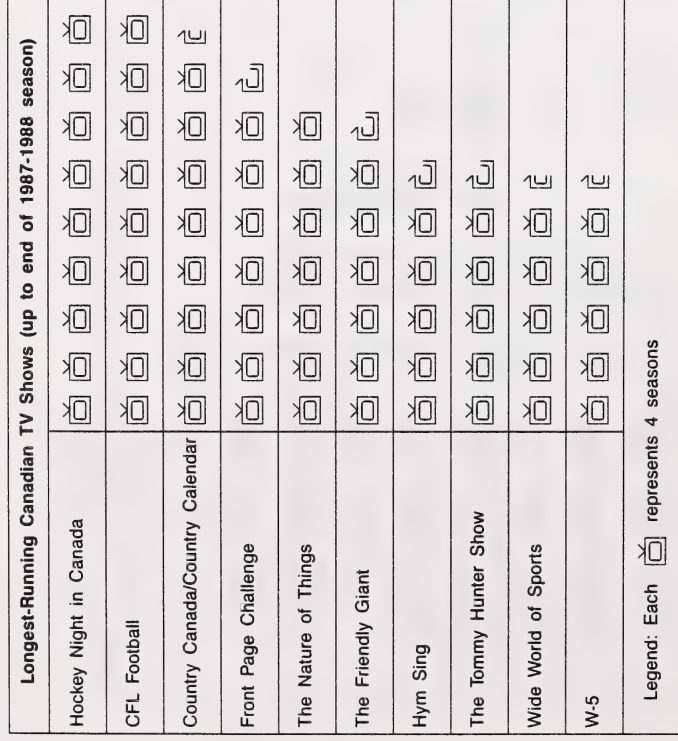
c.  $4.5 \times 10 = 45$  cars  
 $45 \times 12\,000 = 540\,000$

\$540 000 was brought into the business in April.

- d. Does this pictograph tell you clearly which are the best and worst months for car sales?

d. Yes.

4. Use the pictograph below to answer the following questions.



How many seasons had the following shows run up to the end of 1987-1988 season.

- a. Hockey Night in Canada
  - b. Front Page Challenge
  - c. W-5
4. a. Up to the end of 1987-1988 season, Hockey Night in Canada had run 36 seasons.
  - b. Front Page Challenge had run 31 seasons.
  - c. W-5 had run 22 seasons.

### Guiding the Student

- Have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.















Practice Activities

These were the top money-making films up to 1987.

Film	Total Rental
E.T. The Extra Terrestrial (1982)	\$227 960 804
Star Wars (1977)	193 500 000
Return of the Jedi (1983)	168 002 414
The Empire Strikes Back (1980)	141 600 000
Jaws (1975)	129 961 081

Construct a pictogram to display this data. Use  to represent \$30 000 000.

Suggested Answers

Earnings of Films	
E.T. The Extra Terrestrial	             

## BAR GRAPHS

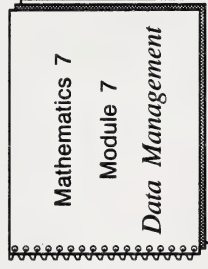
### What Lies Ahead

In this section the student will learn these skills.

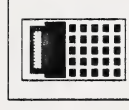
- interpreting a bar graph
- constructing a bar graph

### Gathering Materials

The student will need this item for this section.



(optional)



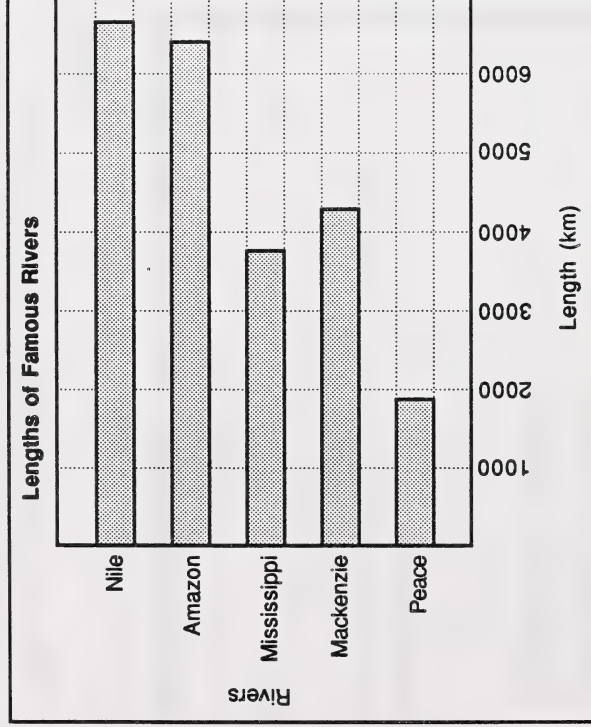
### Guiding the Student

- Have the student turn to Section 5 of the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.

- Then have the student do the Introductory Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

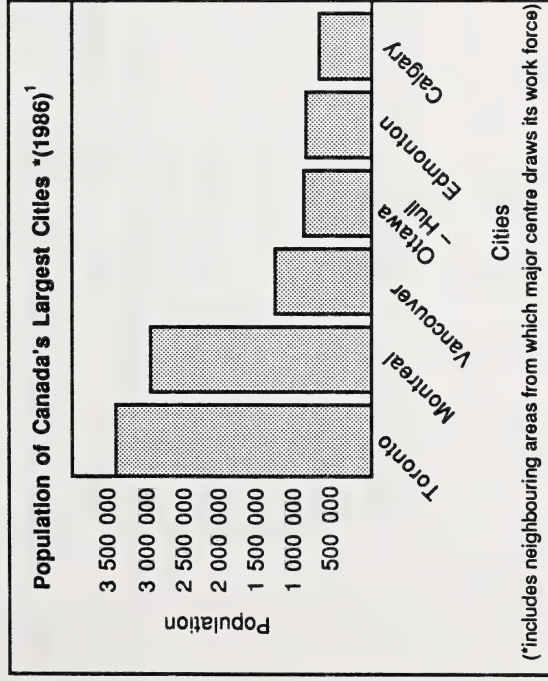
**Introductory Activities****Suggested Answers**

1. Use the bar graph below to answer the following questions.



- a. How long is the Amazon River?  
b. How long is the Nile River?  
c. How long is the Peace River?
1. a. About 6 400 km.  
b. About 6 700 km.  
c. About 1 900 km.

2. Use the graph below to answer the following questions.



<sup>1</sup>Statistics Canada.

- a. How many people live in Calgary?
- a. About 675 000 people live in Calgary.
- b. How many people live in Montreal?
- b. About 2 900 000 people live in Montreal.
- c. How many people live in Vancouver?
- c. About 1 250 000 people live in Vancouver.

### Guiding the Student

- Have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

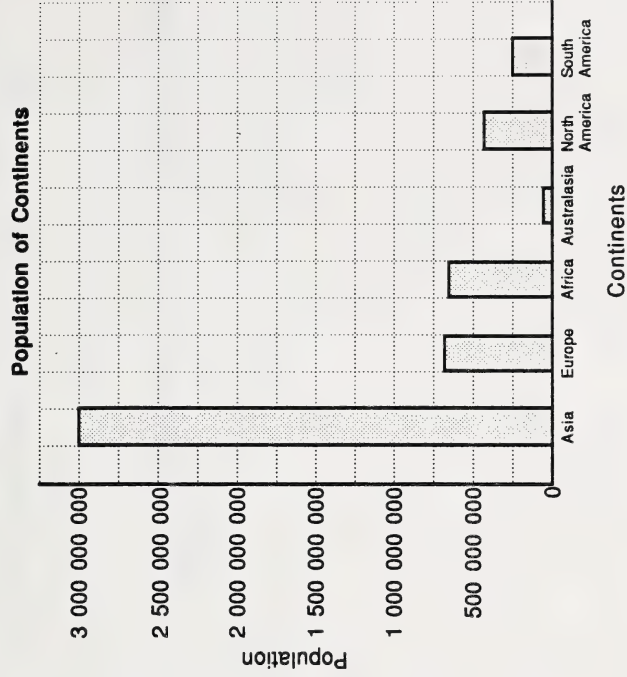
## Practice Activities

Construct a bar graph to display the following data.

**Population by Continents, 1988**

Asia	3 031 100 000
Europe	684 800 000
Africa	615 300 000
Australasia	25 500 000
North America	413 100 000
South America	282 200 000

## Suggested Answers



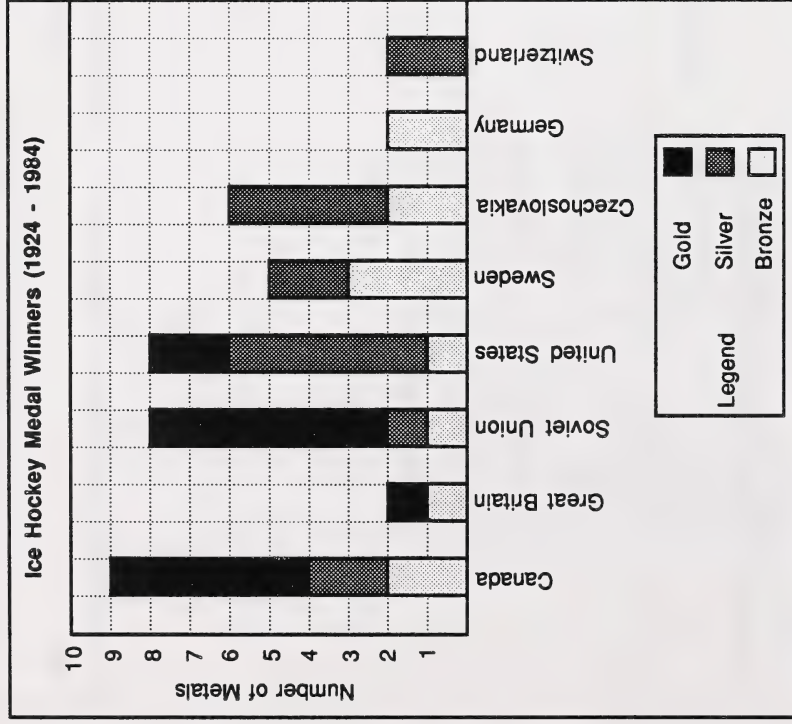
## Guiding the Student

- Have the student do the Concluding Activities.

- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

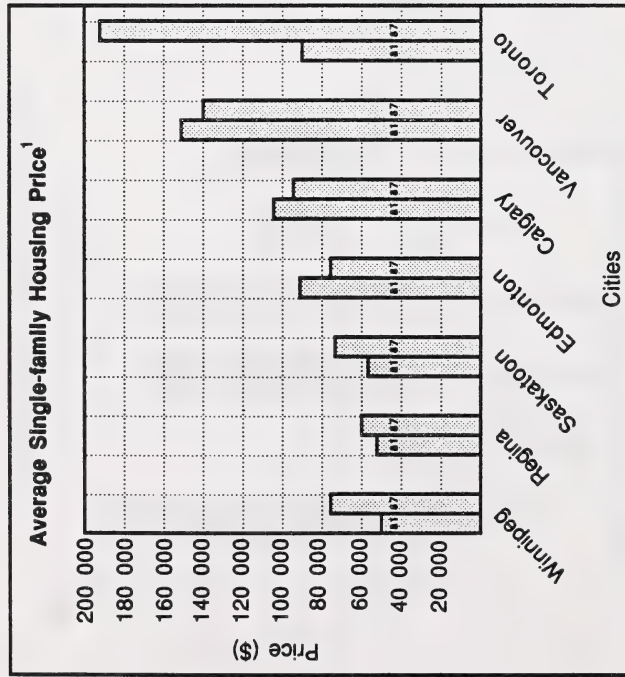
**Concluding Activities****Suggested Answers**

1. Use the graph below to answer the following questions.



- a. Which country won the most medals?
  - b. The Soviet Union and United States won the same number of medals. Which country won the most gold?
  - c. Which countries have won gold medals?
1. a. Canada won the most medals.
  - b. The Soviet Union won the most gold medals.
  - c. Canada, Great Britain, and the Soviet Union have won gold medals.

2. Use the graph below to answer the following questions.



<sup>1</sup>Statistics Canada.

a. In which city did houses cost the most?

(i) in 1981

(ii) in 1987

b. Which city had the most economical houses?

(i) in 1981

(ii) in 1987

c. In which city did prices increase the most between 1981 and 1987?

2. a. (i) In 1981 houses cost the most in Vancouver.

(ii) In 1987 houses cost the most in Toronto.

b. (i) Winnipeg had the most economical houses in 1981.

(ii) Regina had the most economical houses in 1987.

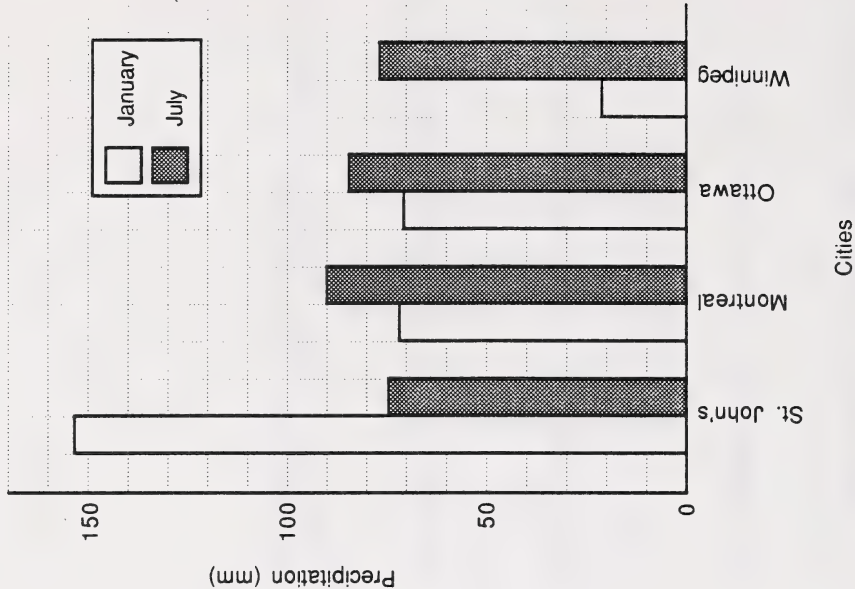
c. In Edmonton, Calgary, and Vancouver prices increased the most between 1981 and 1987.

3. Draw a bar graph to illustrate the following.

Precipitation for Cities in Canada<sup>1</sup>

Millimetres of Precipitation					
Month	St. John's	Montreal	Ottawa	Winnipeg	Vancouver
January	156	72	61	21	154
July	75	90	86	76	32

Precipitation for Cities



<sup>1</sup>Statistics Canada.

# THE LINE GRAPH

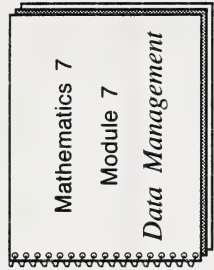
## What Lies Ahead

In this section the student will learn these skills.

- interpreting a line graph
- constructing a line graph

## Gathering Materials

The student will need this item for this section.



coloured  
markers

(optional)

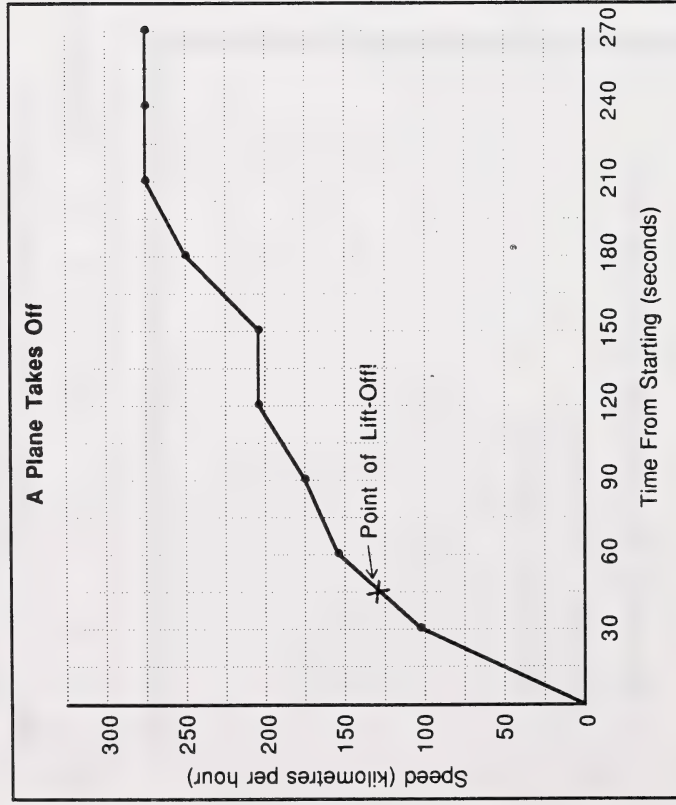


## Guiding the Student

- Have the student turn to Section 6 of the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Then have the student do the Introductory Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

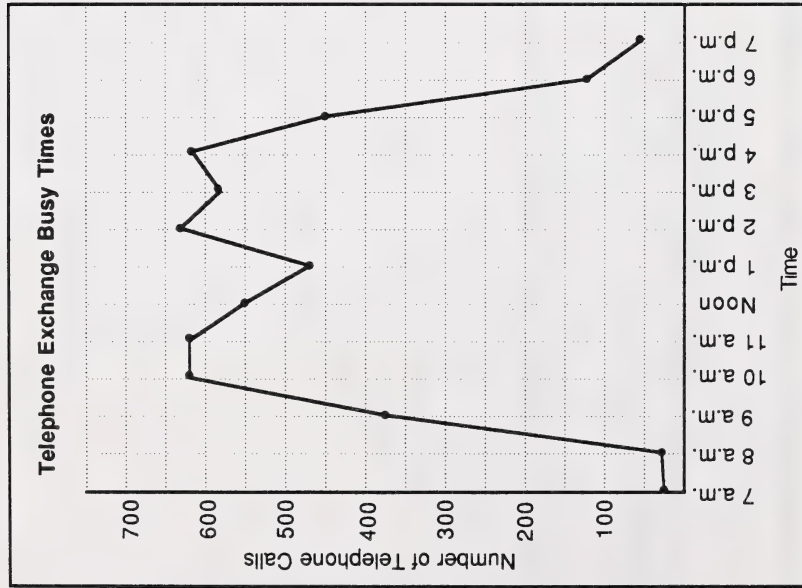
**Introductory Activities****Suggested Answers**

1. Use the graph below to answer the following questions.



- a. After how long did the plane become airborne?
  - b. How fast was the plane travelling when it took-off?
  - c. Did it change its speed between 2 minutes and 3 minutes?
  - d. What was the highest speed attained by the aircraft?
1. a. The plane became airborne after 145 seconds.  
b. The plane was travelling 125 km/h.  
c. Yes.  
d. The speed attained was 275 km/h.

2. Use the graph below to answer the following questions.



- a. At what hours were there more than 500 calls going through the exchange?
2. a. 10 a.m., 11 a.m., 12, 2 p.m., 3 p.m., 4 p.m.
- b. Try to explain why most calls are made between 9 a.m. and 5 p.m.
- b. These are business hours.
- c. Why would there be a drop-off in call between 12:00 and 1:00 p.m.?
- c. This is noon hour.

### Guiding the Student

- Have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

**Practice Activities**

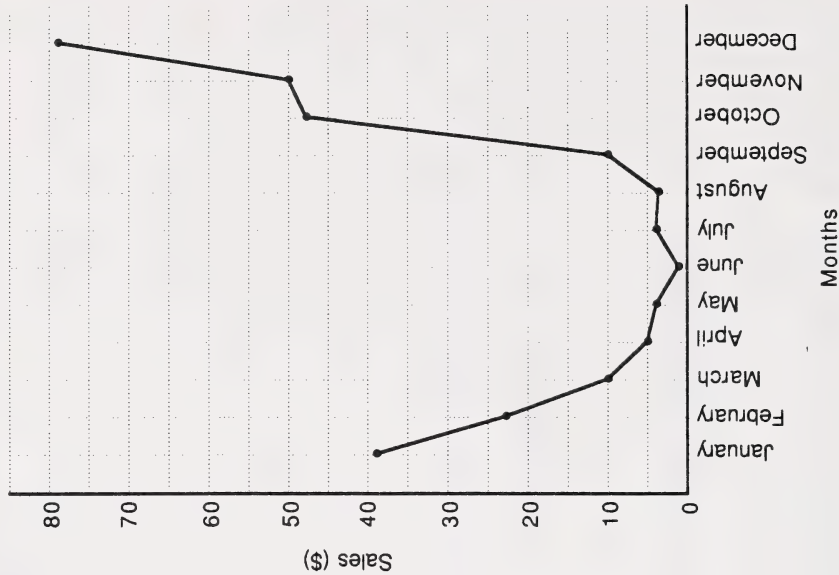
1. Below is data from McCarthy's Sporting Goods Store. Construct a line graph to display the data.

Months	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Sales of Skis	39	23	10	5	4	2	4	4	10	48	50	77

**Suggested Answers**

1.

Sales of Skis at McCarthy's Sporting Goods Store



**Computer Alternative**

2. If you require further practice plotting a point, do Lessons 18 and 19 on the *Pre-Algebra disk of Computer Drill and Instruction: Mathematics, Level D (SRA)*

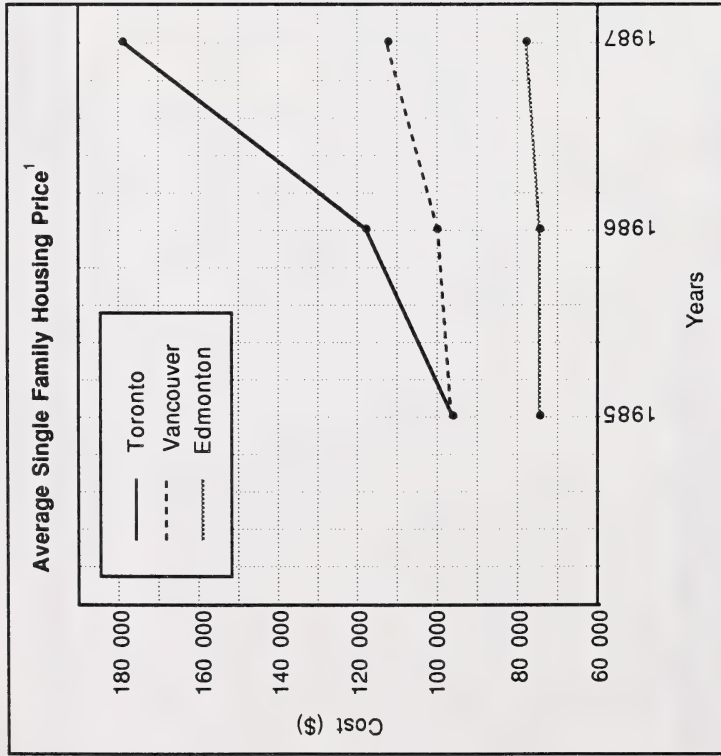
**Guiding the Student**

- Have the student do the Concluding Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

### Concluding Activities

### Suggested Answers

1. Use the graph below to answer the following questions.



<sup>1</sup>Statistics Canada.

- a. In which city did the houses cost the most in 1987?
  - b. In which city did the houses cost the least in 1987?
  - c. In which city did the price of houses change the least from 1985-1987?
1. a. In 1987 houses cost the most in Toronto.  
b. In 1987 houses cost the least in Edmonton.  
c. The price of houses changed the least in Toronto from 1985-1987.

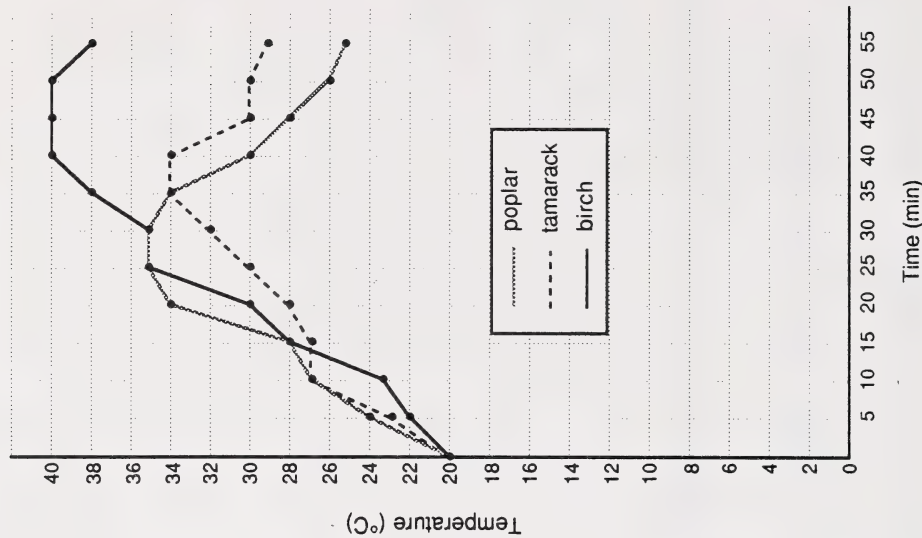
2. For a science fair Susan decided to see which kind of logs burned the hottest and longest. She burnt 3 logs of the same weight. One log was poplar, one was tamarack and one was birch. She placed a thermometer in front of the fireplace and took readings every 5 minutes. Here are the results.

POPLAR	
Time	Temp.
0	20
5	24
10	27
15	28
20	34
25	35
30	35
35	34
40	30
45	28
50	26
55	25

TAMARACK	
Time	Temp.
0	20
5	23
10	27
15	27
20	28
25	30
30	32
35	34
40	34
45	30
50	30
55	27

BIRCH	
Time	Temp.
0	20
5	22
10	27
15	28
20	30
25	35
30	35
35	38
40	40
45	40
50	40
55	38

Burning Logs



Display this information on a line graph. Use different colours to represent the three kinds of wood.

3. Use the graph you constructed in Question 2 to answer the following.

a. Which kind of log got the hottest?

b. How long did it take each of the following logs to reach its highest temperature?

(i) poplar?

(ii) tamarack?

(iii) birch?

c. Which logs cooled-off the fastest?

d. Why did each temperature start at  $20^{\circ}\text{C}$ ?

3. a. Birch got the hottest.

b. (i) Poplar: 40 minutes

(ii) Tamarack: 35 minutes

(iii) Birch: 40 minutes

c. Poplar cooled off the fastest.

d. This is room temperature.



## CIRCLE GRAPHS

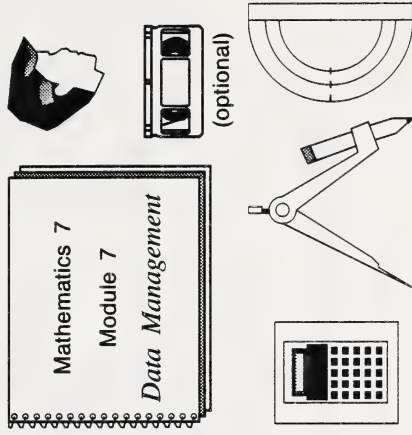
### What Lies Ahead

In this section the student will learn these skills.

- interpreting a circle graph
- constructing a circle graph

### Gathering Materials

The student will need these items for this section.

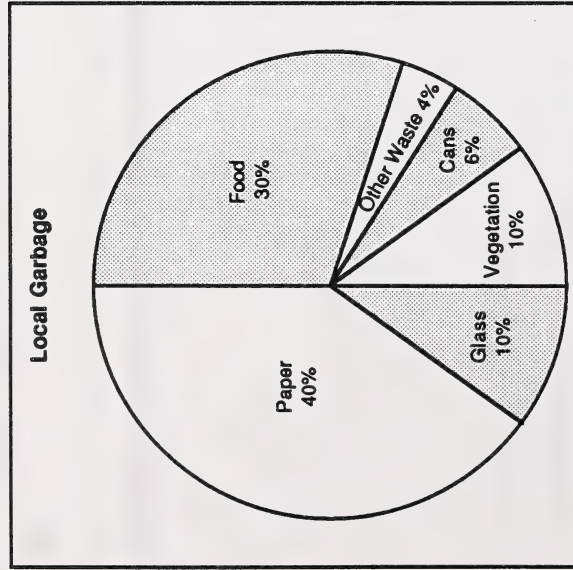


### Guiding the Student

- Have the student turn to Section 7 of the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Then have the student do the Introductory Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

**Introductory Activities****Suggested Answers**

1. Look at the circle graph below and then answer the following questions.



- a. Of which kind of garbage is there the most?
  - b. How many times as much paper is thrown out as vegetables?
1. a. Paper  
b. 4 times

- c. In 1t (1 000 kg) of garbage, how many kilograms is there of

(i) glass

$$\begin{aligned}\text{c. (i)} \quad & 30\% \text{ of } 1\,000 \text{ kg} \\ &= 0.3 \times 1\,000 \\ &= 300 \text{ kg}\end{aligned}$$

In 1t there is 300 kg of glass.

(ii) Cans

$$\begin{aligned}\text{(ii)} \quad & 6\% \text{ of } 1\,000 \text{ kg} \\ &= 0.06 \times 1\,000 \\ &= 60 \text{ kg}\end{aligned}$$

In 1t there is 60 kg of cans.

(iii) paper

$$\begin{aligned}\text{(iii)} \quad & 40\% \text{ of } 1\,000 \text{ kg} \\ &= 0.4 \times 1\,000 \\ &= 400 \text{ kg}\end{aligned}$$

In 1t there is 400 kg of paper.

- d. If people could reuse the paper, the glass, and the cans, how much out of every 1 000 kg would have to be thrown away?

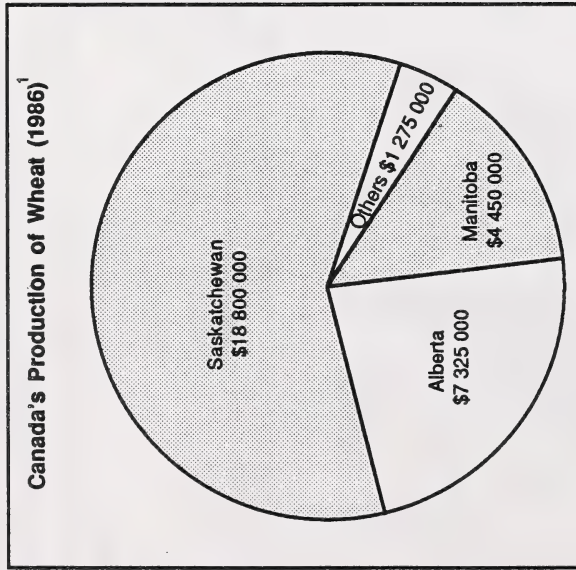
$$\begin{aligned}\text{d.} \quad & 40 + 10 + 6 = 56\% \\ & 56\% \text{ of } 1\,000 \\ &= 0.56 \times 1\,000 \\ &= 560 \text{ kg}\end{aligned}$$

In 1t 560 kg could be reused.

$$1\,000 - 560 = 440$$

In 1t 440 kg would have to be thrown away.

2. Use the graph below to answer the following questions.



<sup>1</sup>Statistics Canada.

a. Which province produced the most wheat? 2. a. Saskatchewan

b. About what percent of the total production of wheat is produced in each province?

(i) Saskatchewan

b. (i) about 60%

(ii) Alberta

(ii) about 25%

(iii) Manitoba

(iii) about 12%

**Computer Alternative**

3. For more practice estimating percents on a circle graph, do "Pie Graphics" on *Disk C of MAC 7* (Houghton Mifflin).

**Guiding the Student**

- Have the student read the notes on how to construct a circle graph.
- Have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

Practice Activities

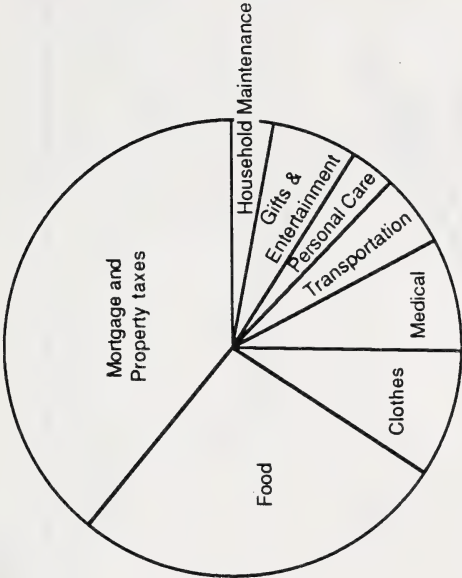
Suggested Answers

1. George Grant's net income each month is 2 000.00. Here's how he budgets the money.

Expenses	Cost
Mortgage and property taxes	\$780
Food	540
Clothing	180
Medical	160
Transportation	100
Personal care	60
Gifts and entertainment	120
Household maintenance	60

Draw a circle graph to illustrate this data.

George Grant's Budget



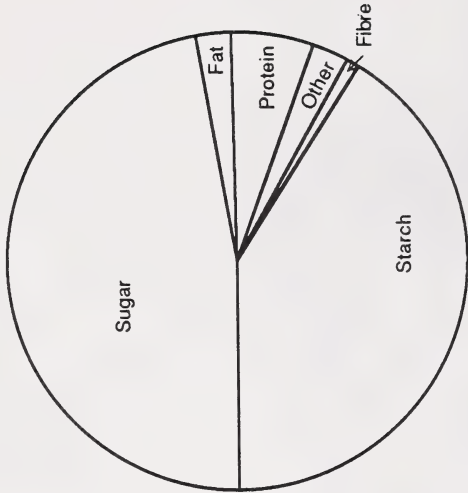
2. A package of cereal seen at a supermarket contained the

following nutritional information.

Per Serving	
Nutrients	Mass
Protein	4.6 g
Fat	1.7 g
Sugar	13.5 g
Dietary Fibre	8.2 g

A serving is 28 g. Construct a circle graph to show the amount of each nutrient in a serving of the cereal.

A Serving of Cereal



### Guiding the Student

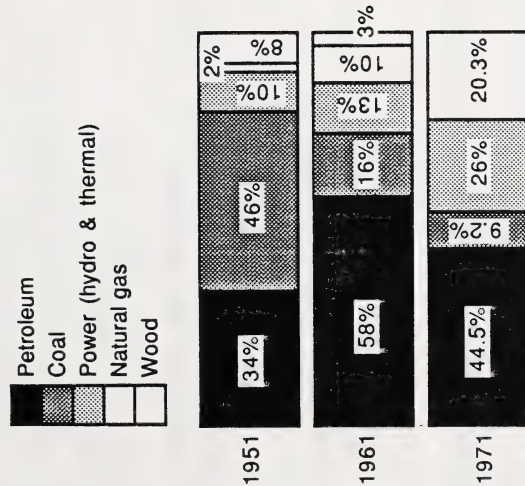
- Have the student do the Concluding Activities.
- Afterwards help the student check the answers and correct any errors. Suggested answers are on the next page of this booklet.

## Concluding Activities

Circles are usually used to show percents, but other shapes such as rectangles can be “sliced” into percents. Consider the graph below.

## Suggested Answers

Canadian Energy Consumption<sup>1</sup>



<sup>1</sup>Statistics Canada.

1. What was the form of energy used the least

a. in 1951?

1. a. In 1951 natural gas was used the least.

b. in 1961?

b. In 1961 wood was used the least.

c. in 1971?

c. In 1971 coal was used the least.

2. a. Which form of energy decreased proportionally the most from 1951 to 1971?

2. a. Wood decreased proportionally the most.

b. Which form of energy increased proportionally the most from 1951 to 1971?

b. Natural gas increased proportionally the most.

## CHOOSING THE MOST APPROPRIATE GRAPH

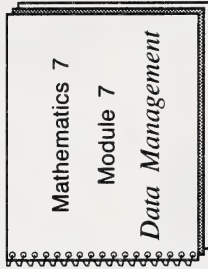
### What Lies Ahead

In this section the student will learn these skills.

- choosing the most appropriate graph
- displaying data

### Gathering Materials

The student will need this item for this section.



(optional)

*MATHWISE: Graphs — Locating and Interpreting*

### Guiding the Student

- Have the student turn to Section 8 of the Module Booklet, and read the "What Lies Ahead" box and the introductory paragraphs of "Working Together".
- Next, have the student view the video or read the notes.
- Then have the student do the Practice Activities.
- Afterwards help the student check the answers and correct any errors. (Suggested answers are on the next page of the booklet.)

**Practice Activities**

Given the following information, you are to choose which kind of graph would be **best** to represent the information (Choose from pictographs, bar graphs, broken-line-graphs, or circle graphs).

1. You want to show that 60% of the schools students come from farms and acreages while 40% come from the town itself.
2. You want to show to a group of 6-year-olds that Mount Everest is taller than a skyscraper.
3. You want to compare the populations of Toronto, Montreal, Vancouver, Edmonton and Calgary.
4. You want to track how far a rocket has gone from the time of its launch.
5. You want to show what sports Canadians like to watch the most — hockey 30%, football 25%, curling 20%, baseball 10%, figure skating 10%, others 5%.
6. You want to show the average temperature by month for the city of Victoria.
7. You want to show temperature change with increase in elevation.

**Suggested Answers**

1. Circle graph
2. Bar graph
3. Bar graph or pictograph
4. Line graph
5. Circle graph
6. Line graph
7. Line graph

8. You wish to show the money raised by various classes in a fund drive. 8. Circle graph

Class	Amount Raised	Percent of Total
Grade 7A	\$ 60	20%
Grade 7B	\$ 90	30%
Grade 7C	\$120	40%
Grade 7D	\$ 30	10%

9. You wish to show how many tourists came to Canada in 1981, 1985, and 1989? 9. Bar graph, pictograph
10. You wish to show the trend in the Canadian demand for electricity from 1960 to 1990. 10. Line graph



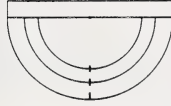
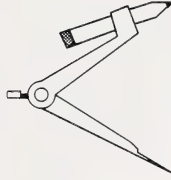
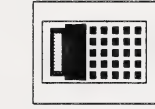
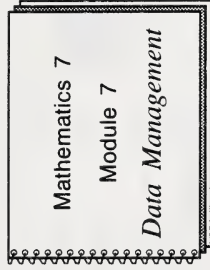
## SUMMARY

### What Lies Ahead

In this summary the student will review the skills taught in this module.

### Gathering Materials

For this section the student will need these items.



### Guiding the Student

- Have the student turn to the Summary in the *Module Booklet* and review the skills.
- Then have the student turn to Section 1 to review the pretest and to correct any errors.



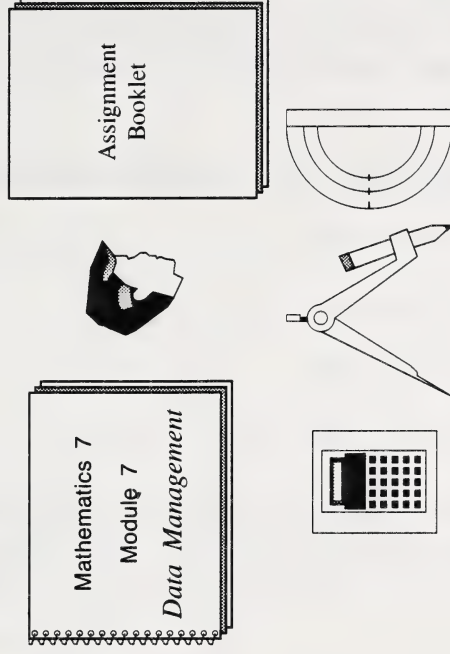
## MODULE CONCLUSION

### What Lies Ahead

The student is now ready to do the assignment in the Assignment Booklet. The student will be graded on the work done in this booklet.

### Gathering Materials

The student will need the following items.



### Guiding the Student

- Have the student complete the Assignment. The student may refer to the notes, but the Assignment must be done independently.
- Afterwards, you should both sign the declaration and you should submit the Assignment Booklet to the Alberta Distance Learning Centre for feedback and a grade.



**Learning Facilitator:** Please work with your student to evaluate this course and return this survey with your last Assignment Booklet. This is a course designed in a new distance-learning format, so we are interested in your responses. Your constructive comments will be greatly appreciated so that a future revision may incorporate any necessary improvements.

## COURSE SURVEY FOR MATHEMATICS 7

Name \_\_\_\_\_ File Number \_\_\_\_\_

Address \_\_\_\_\_ Telephone Number \_\_\_\_\_

\_\_\_\_\_ Age \_\_\_\_\_

\_\_\_\_\_ Date \_\_\_\_\_

A. Rate the following aspects of the course by checking the appropriate box. (If you strongly agree with the statement check 5. If you partially agree check 4, if you feel neutral check 3, if you partly disagree check 2, if you strongly disagree check 1.)

- |  | 5                        | 4                        | 3                        | 2                        | 1                        |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| 1. The course was interesting.   |                          |                          |                          |                          |                          |
| 2. The main ideas were explained well.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. The directions for the activities were clear.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. There is a variety of activities.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. The amount of work was reasonable.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. It was easy to read and understand.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. The Extra Practice (remediation) and Concluding Activities (enrichment) were helpful. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

B. 1. This course contained a series of Module Booklets and Assignment Booklets. Do you like the idea of separate booklets?

\_\_\_\_\_

\_\_\_\_\_

Name of Student \_\_\_\_\_ Student I.D.# \_\_\_\_\_

Name of School \_\_\_\_\_ Date \_\_\_\_\_

2. Have you ever enrolled in a correspondence course that arrived as one large book.

☐ Yes ☐ No If yes, which style do you prefer?

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3. Suggestions for computer and video activities are included in the course. Were you able to use these activities?

☐ Yes ☐ No Comment on the lines below.

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4. The answers for the activities in the Module Booklets were placed in the Student Support Guides. How well did you work as a team?

Student's comments: \_\_\_\_\_

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Learning Facilitator's comments: \_\_\_\_\_

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Name of Student \_\_\_\_\_ Student I.D.# \_\_\_\_\_

Name of School \_\_\_\_\_ Date \_\_\_\_\_

5. Did you contact the Alberta Distance Learning Centre for help or information while doing your course?

☐ Yes ☐ No If yes, approximately how many times? \_\_\_\_\_

Did you find the staff helpful?

☐ Yes ☐ No If no, explain.

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6. Were you able to fax any of your assignments?

☐ Yes ☐ No If yes, comment how it speeded up completion of your course.

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7. If you were mailing your assignments, how long was it taking for Assignment Booklets to return?

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8. Was the feedback you received from your distance learning teacher helpful?

☐ Yes ☐ No Comment on the lines below.

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Name of Student \_\_\_\_\_ Student I.D.# \_\_\_\_\_

Name of School \_\_\_\_\_ Date \_\_\_\_\_

9. What did you like least about the course?

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10. What did you like most about the course?

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Additional Comments

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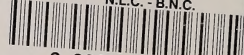
**Thanks for taking the time to complete this survey. Your feedback is important to us.**

Name of Student \_\_\_\_\_ Student I.D.# \_\_\_\_\_

Name of School \_\_\_\_\_ Date \_\_\_\_\_



N.L.C. - B.N.C.



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Mathematics 7

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